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Bonding

3 Types of Bonds

Metals +
Nonmetals

IONIC - A link between oppositely charged ions attract to each other. ($\text{Na}^+ + \text{I}^- \rightarrow \text{NaI}$)

Nonmetals

Covalent - A link between atoms, resulting from sharing electrons. ($:\ddot{\text{I}}: + :\ddot{\text{Cl}}: \rightarrow :\ddot{\text{I}}:\ddot{\text{Cl}}:$)

Metals

Metallic - Bonding in Metals, in between Ionic and Covalent.

Properties of Compounds

Ionic

- Brittle
- Non-conductive as a solid / Conductive as liq.
- Ions locked into place (can't move)
- High Melting Temperature
- Soluble in H_2O

Covalent

- Non-conductive as solid / liquid
- Brittle
- Low Melting temperature
- Soluble (some not)

Metallic

- Conductive
- Luster
- Malleable

Electrolyte - A substance that conducts electricity when dissolved in H_2O .

Non Electrolyte - A substance that does not conduct electricity when dissolved in H_2O .

Most Covalent compounds

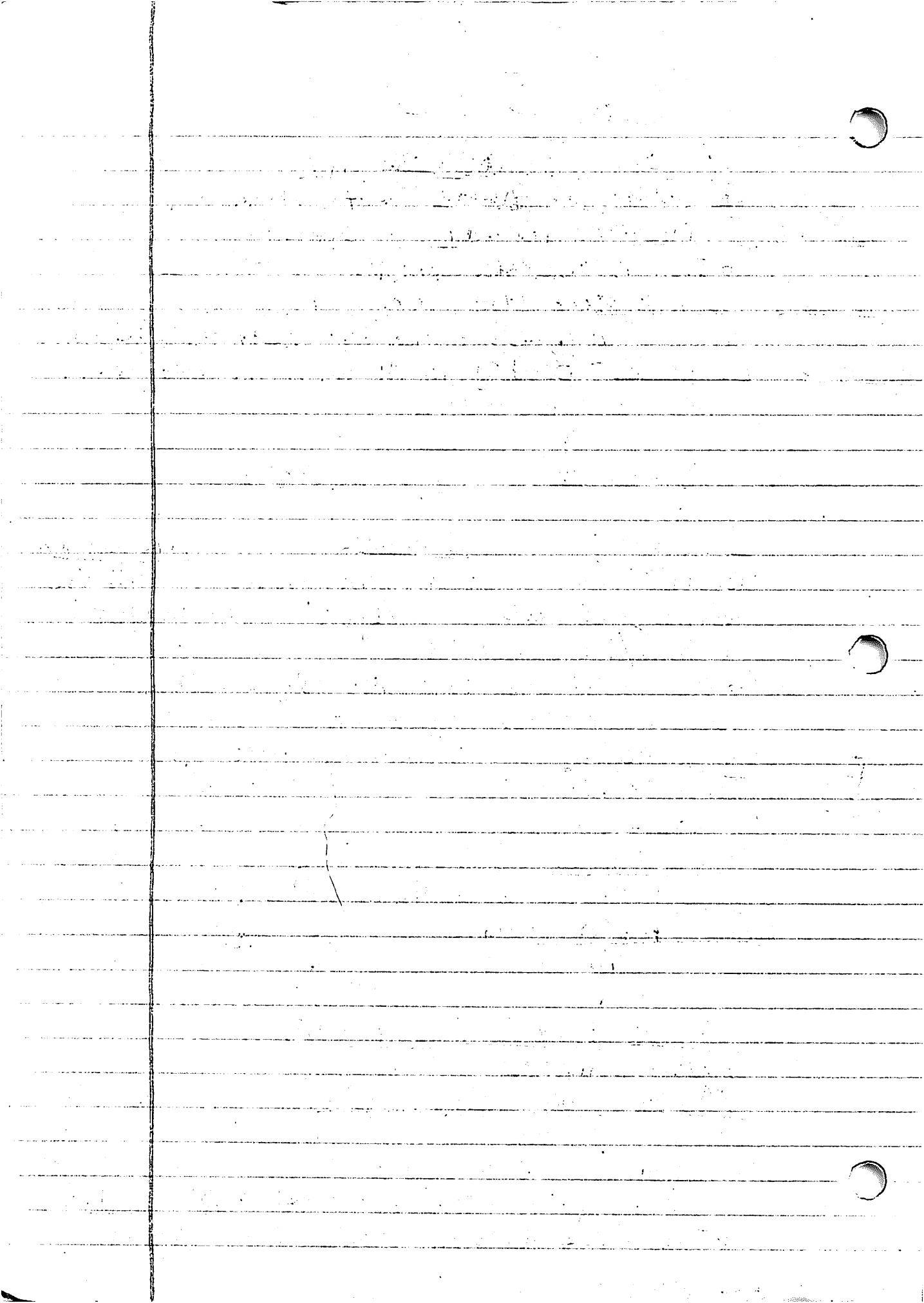
↳ Non-Electrolytes.

Most Ionic Compounds

↳ Electrolytes.

↳ When the ionic compound dissolves, the ions break apart from each other \rightarrow Dissociation.

↳ The free floating mobile ions conduct the electric current.



Crystal Lattice Structure

↳ Ionic compound shape/structure.

Metallic Bonding

↳ "Sea of electron model"

↳ Core electrons and nuclei "float" inside the communally shared valence electrons

Delocalization - electrons do not belong to any 1 atom.

Drawing Lewis Structures

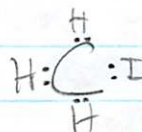
↳ Depict how covalent compounds are bonded together.

Molecule - A group of atoms covalently bonded, that can exist independently

1. Count total number of valence electrons from atoms.
2. From the total number of valence electrons, find the number of pairs of electrons.
3. Arrange the atoms in a simple layout:
 - Carbon (C) is always a central atom.
 - Hydrogen (H) is never a central atom.

Ex: CH_3I

4. Put electron pairs between the atoms to bond them together



5. Put electron ^{pairs} around other non-metals to give them octets. ($8e^-$)

Octet Rule: Atoms gain/lose/share e^- to get $8e^-$ in outer shell.

Isomer

↳ Compounds with the same molecular formula, but different structures. (Different compounds)

Molecular formula - Indicates the number of each atom present in a molecule.

Structural formula - Indicates the layout of a molecule's structure as well as the number of each atom that is present.